

What is Claimed Is:

1. A polymer electrolyte fuel cell comprising a cell stack including a hydrogen ion conductive polymer electrolyte membrane, a pair of electrodes sandwiching said membrane and a pair of conductive separators, one of which has a gas flow channel for supplying and exhausting a fuel gas to and from one of said electrodes and the other has a gas flow channel for supplying and exhausting an oxidant gas to and from the other electrode,

wherein at least one of said gas flow channels is connected to an inlet manifold at a junction, wherein the lowermost part of said junction is positioned above a gas supply pipe connected to said inlet manifold.

2. The polymer electrolyte fuel cell in accordance with claim 1, wherein said at least one gas flow channel has a serpentine configuration which is arranged substantially parallel to gravity.

3. The polymer electrolyte fuel cell in accordance with claim 1, wherein said inlet manifold has a vertically oriented cross section.

4. The polymer electrolyte fuel cell in accordance with claim 1, wherein a junction of said gas supply pipe with said inlet manifold is positioned below the center of said inlet manifold.

5. The polymer electrolyte fuel cell in accordance with claim 1, wherein said at least one of said gas flow channel is connected to an outlet manifold, which has a gas exhaust pipe connection, and wherein the junctions of said gas flow channel and said gas exhaust pipe with said outlet manifold are positioned in a lower part of said outlet manifold.

6. The polymer electrolyte fuel cell in accordance with claim 1, wherein said inlet manifold has a constriction between said gas supply pipe connection and said lowermost part of said gas flow channel connected.

7. The polymer electrolyte fuel cell in accordance with claim 1, wherein said gas supply pipe is extended into said inlet manifold.

8. The polymer electrolyte fuel cell in accordance with claim 7, wherein an extended part of said gas supply pipe has at least one hole in the top thereof.

9. The polymer electrolyte fuel cell in accordance with claim 7, wherein said extended part of said gas supply pipe has a plurality of holes in the top thereof, which are spaced apart at decreasing intervals inwardly.

10. A fuel cell comprising a separator having one or more gas flow channels connected to and in fluid communication with an inlet manifold, and a gas supply connection in fluid communication with the inlet manifold of the separator,

wherein the lowermost part of any of the one or more gas flow channel connections with the inlet manifold is above the uppermost part of the gas supply connection.

11. The fuel cell in accordance with claim 10, wherein the gas supply connection is below the approximate vertical center of the inlet manifold.

12. The fuel cell in accordance with claim 10, wherein the one or more channels are further connected to an outlet manifold, which has an exhaust connection at a lower part of the outlet manifold.

13. The fuel cell in accordance with claim 12, wherein the gas flow channel connections with the outlet manifold are at a lower part of the outlet manifold.

14. The fuel cell in accordance with claim 10, wherein the inlet manifold has a constriction between the gas flow channel connection and the gas supply connection.

15. The fuel cell in accordance with claim 10, wherein the one or more gas flow channels have a serpentine configuration which is arranged substantially parallel to gravity.

16. The fuel cell in accordance with claim 10, further comprising a unit cell including a membrane sandwiched between two electrodes and the separator contacting one of the electrodes.

17. The fuel cell of claim 16 further comprising a plurality of the unit cells.
18. A separator for a fuel cell comprising a gas channel connected to an inlet manifold on the separator, wherein the inlet manifold has a top and bottom and a constriction between its top and bottom.